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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,290

06/08/2007

Thomas Brosche

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NEW YORK, NY 10004

EXAMINER

BYTHROW, PETER M

ART UNIT

PAPER NUMBER

3662

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,290	Applicant(s) BROSCHÉ, THOMAS	
	Examiner Peter M. Bythrow	Art Unit 3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-15 is/are pending in the application.
4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 9-15 is/are rejected.
- 7) ☒ Claim(s) 9-15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statements filed 06/16/2006 and 02/26/2007 have been entered and considered. Initialed copies of the PTO-1449 by the Examiner are attached.

Oath/Declaration

3. The oath filed on 06/08/2007 is acceptable.

Drawings

4. The drawings filed on 06/16/2006 are acceptable.

Claim Objections

5. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 8-14 have been renumbered 9-15. For the purpose of this action claims 8-14 shall be referred to by the new enumeration 9-15, respectively.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 13 and 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to Claim 13, the claim discloses “n radar sensors transmitting simultaneously, without interruption”. As indicated by the specification and the independent claim 8, the invention is directed towards sensors employing pulsed transmission signals. The terminology “transmitting simultaneously, without interruption” is deemed indefinite because uninterrupted transmission would indicate a continuous wave system, and not a pulsed wave system. In addition, as cited by claim 1 “a phase angle of the repetition frequency f_w of the transmission signal is selected differently for each sensor” indicates that each sensor is transmitting pulses with the same repetition frequency but delayed in time from one another. However, the limitation of claim 8 of “n radar sensors transmitting simultaneously” in a pulsed system would seem to indicate that the time delay between sensors is zero, and therefore the phase angle of each respective sensor's repetition frequency is not different.

As to Claim 15, the claim discloses “a self echo signal and (n-1) cross echo signals are evaluated at least one of simultaneously and sequentially in a radar sensor when simultaneous evaluation of a plurality of receivers is provided”. It is indefinite as to how a sensor can simultaneously evaluate these echo signals when a simultaneous evaluation is provided. This limitation seems to imply a redundancy. The specification, on page 6 lines 10-14, indicates that “simultaneous” evaluation occurs on a plurality of receiving sensors. However, the language as used by claim 14 does not elucidate this stipulation.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9, 10, 14, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoenes (US 6166995) in view of Bank (A novel ultrasonic sensing system for autonomous mobile systems, Bank, D.; Sensors Journal, IEEE, Volume 2, Issue 6, Dec. 2002 Page(s):597 – 606).

As to Claim 9, Hoenes discloses a system comprising a plurality of sensors (figure 2 elements 1-12), each sensor including a transmitter and receiver for signals (column 3 lines 36-40), the sensors being able to receive a cross echo signal of another of the sensors (column 1 lines 59-65), and the phase angle of the repetition frequency

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being selected differently for each sensor (figure 1 from $t[\text{ms}]=0$ to $t[\text{ms}]=120$), as manifest in the embodiment defined by sequential transmission of the sensors (column 2 lines 20-34). Hoenes discloses the receiving intervals being related to the transmission timing of the signals (column 4 lines 3-29). However, Hoenes does not specifically disclose each of the sensors one of receiving and analyzing one of self-echo and cross-echo signals only for specific intervals relating to a time delay of a reception signal in relation to a transmission signal of its own.

Bank discloses a system comprising a plurality of sensors, capable of receiving cross echo signals of another signal, used for defining a 360 degree view of a vehicle's surroundings (page 597 column 1 first partial paragraph and page 599 column 1 last partial paragraph), with every 8th sensor transmitting in order to avoid mutual interference (page 600 column 1 last partial paragraph). Bank discloses each of the sensors receiving and analyzing one of self-echo and cross echo signals only for specific intervals relating to a time delay of a reception signal in relation to a transmission signal of its own (page 600 column 2), specifically the defined measurement period of 12ms. It would have been obvious to modify Hoenes such that each of the sensors received and analyzed one of self-echo and cross echo signals only for specific intervals relating to a time delay of a reception signal in relation to a transmission signal of its own, as taught by Bank, in order to ensure the reception of cross echo signals at respective sensors.

As to Claim 10, Hoenes discloses the sensors being ultrasound sensors (column 3 lines 36-40).

As to Claim 14, Bank discloses a first radar receiver receiving the cross echoes of additional sensors over a range of distance ranges corresponding to the TOF of a signal in a specific band of ranges (page 601 second column first complete paragraph).

As to Claim 15, Bank discloses evaluating a self echo signal and cross echo signals (page 601 and figures 3 and 12).

10. Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoenes (US 6166995) in view of Bank (A novel ultrasonic sensing system for autonomous mobile systems, Bank, D.; Sensors Journal, IEEE, Volume 2, Issue 6, Dec. 2002 Page(s):597 – 606) as applied to claim 10 above, and further in view of Jorg and Berg (Mobile robot sonar sensing with pseudo-random codes, Jorg, K.-W.; Berg, M.; Robotics and Automation, 1998. Proceedings. 1998 IEEE International Conference on, Volume 4, 16-20 May 1998 Page(s):2807 - 2812 vol.4).

As to Claim 11, Jorg discloses a system employing a plurality of sensors capable of receiving cross echo signals from another sensor (page 2808 column 1 first complete paragraph). Jorg discloses using PN codes for the transmission signals to use self-echo and cross echo signals to triangulate the position of an object (page 2811 column 1 last paragraph). it would have been obvious to modify Hoenes and Bank, such that PN codes were used for the transmission signals, as taught by Jorg, as PN codes will help prevent cross talk between adjacent sensors, as well as prevent interference from external sources.

As to Claim 12, Hoenes discloses each of the radar sensors monitoring a distance range from 0m to a maximum range (figures 4-6).

As to Claim 13, Hoenes discloses the plurality of radar sensors transmitting simultaneously (column 2 lines 19-34 and figure 1 from $t[\text{ms}]=120$ to $t[\text{ms}]=180$)

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter M. Bythrow whose telephone number is (571)270-1468. The examiner can normally be reached on Mon-Fri, 8AM-5:30PM, Alt Fri, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Peter Bythrow

Examiner

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/Thomas H. Tarcza/

Supervisory Patent Examiner, Art Unit 3662